

Methods and Patients: Patients with NSCLC and proven ipsilateral or subcarinal lymph node metastases (N2 disease, 3A disease stage) who had been treated with induction chemotherapy and showing at least stable disease or partial response on CT imaging underwent mediastinal restaging by EBUS-TBNA. This was followed by surgical resection of the tumour with lymph node dissection.

Results: 124 Patients (51 male, 73 female, mean age 58 y.) had either a partial response (n=66) or stable disease (n=58) based on sequential CT scans of the thorax. After restaging all patients underwent surgery. Overall the sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of EBUS-TBNA for mediastinal re-staging following induction chemotherapy were 76%, 100%, 100%, 20% and 77% respectively.

Conclusions: EBUS-TBNA is an accurate, safe and minimally invasive diagnostic technique for the restaging of mediastinal lymph nodes after induction therapy in NSCLC. It's routine use for this purpose should be considered.

C2-02

Staging Efficacy, Wed, 10:30 - 12:15

Factors effecting risk of pneumothorax (PNX) in CT-guided transthoracic needle biopsy of lung lesions: results of 708 consecutive procedures

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Background: CT-guided Transthoracic Needle Biopsy (TNB) is commonly used in the diagnosis of thoracic lesions. PNX is the most common complication of this procedure with a reported rate from 8 to 61%, with few cases requiring chest tube insertion. The aim of this prospective study was to estimate the risk of PNX in patients undergoing CT-guided lung biopsy and to determine which factors affect its occurrence.

Methods: Between November 2002 and August 2006, 708 TNB were performed in 691 patients with a CT-documented central or peripheral pulmonary lesion: 75% were males, median age was 67 years (range 29-87). Risk factors for PNX were classified in three groups: patient-related (age, sex, emphysema around the lesion), lesion-related (size, depth, location, presence of cavitations and/or pleural tags, chest wall invasion, pleural thickening, fissure/atelectasis in the needle path) and procedure-related (patient position, needle puncture side, chest wall thickness, dwell-time (time between pleural puncture and needle removal), needle-pleural angle (smallest angle of the needle with the pleura), number of cutting specimens, number of pleural passages. Lesion depth was measured as the length of the aerated lung from the surface of pleura to the edge of the lesion. Lesion size was considered the average lesion diameter in two axial planes. Immediately after the procedure, a CT scan was obtained to control presence of PNX; patients were followed-up for 4 hours and chest radiographs were obtained at the end of this period. All variables were analysed by Chi-square and Student t test for occurrence of PNX and p value < 0.05 was considered as statistically significant.

Results: PNX occurred in 181/708 procedures (25.6%) and tube insertion was required in 18 cases (2.5%). An higher lesion depth was

the most significant predictor of PNX (p=0.002): the mean depth of lesions from the pleural surface was 27.4 mm in patients with PNX and 17.2 mm in patients without PNX. There were 216 lesions in direct contact with the pleura: PNX developed in only 20 (9.2%). Among lesion related variables, chest wall invasion (p<0.03) and lesion size (p=0.03; 31.7 mm in group with vs 38.9 mm in group without PNX) showed correlation. A greater incidence of PNX was seen in smaller lesions: for lesions 1 cm or smaller, the rate was 35%. Among patient and procedure variables, age (68 vs 64 years, p<0.03) and number of cutting specimens (p=0.01) were associated with an increased risk of PNX. Number of pleural punctures, needle-pleural angle, dwell-time, lesion location, presence of emphysema along needle path and sex did not effect risk of PNX.

Conclusion: In consecutive cases of CT-guided TNB the length of the lung parenchyma crossed during the biopsy is the predominant risk factor for PNX. The risk of PNX was also related to the mean lesion size, age, presence of chest wall invasion and number of cutting specimens.

C2-03

Staging Efficacy, Wed, 10:30 - 12:15

The accuracy of real-time endobronchial ultrasound (EBUS) in the staging of lung cancer

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Accurate staging allows assessment of prognosis and determines treatment plans in patients with lung cancer. Evaluation of mediastinal lymphnodes (LN) is crucial to determine the stage of the cancer. Only up to 20% of patients with lung cancer present in early stage allowing surgical treatment. Current mediastinal staging methods include mediastinoscopy (MS) and CT-PET. MS with the sensitivity of 70% - 95% is the gold standard in evaluation of LN and provides access to LN stations: 2, 3, 4, and 7. MS is an invasive procedure, which requires general anaesthetic, carries minimal, nonetheless, mortality and for technical reasons it is usually done only once. There is therefore a need to develop less invasive techniques allowing an adequate evaluation of mediastinal LN. CT-PET has been shown to be useful in predicting malignant mediastinal LN with a high negative predictive value (97%) but with only moderate positive predictive value (75%). However, CT-PET does not provide histological diagnosis. Real-time Endobronchial Ultrasound FNA with Doppler facilities (EBUS) provides a safe alternative to MS in staging of lung cancer. EBUS allows easy access to mediastinal and hilar LN stations: 2, 3, 4, 7, 10 and 11. EBUS is performed as an out-patient procedure in conjunction with standard bronchoscopy under conscious sedation.

We have performed 300 EBUS procedures from May 2005 until Mar 2007 using an OLYMPUS Ultrasonic Linear Bronchoscope BF-UM40. Tissue samples were obtained using 22G needle and processed using a thin layer technique and stained with PAP. Any residual material was processed as a cell block.

There were 153 positive aspirations for malignancy. In 124 cases we diagnosed Non Small Cell Lung Cancer, 23 Small Cell Lung Cancer and 6 mixed tumours. The most frequently (in order) sampled LN stations were: 7, 4, 10, 11, 2 and 3. There were 7 false negative results. 87 primary tissue diagnoses were obtained and 137 MS were avoided. There were no complications. Calculated EBUS sensitivity was 94%